

61 and a punch 60 and using a co-injection head 6 supplied with structure material A and barrier material B, a flow of structure material A is co-injected for a time  $T = T_0$  together with, from a time  $T = t$  until a time  $T = T_0 - t'$ , a flow of barrier material corresponding to said inner layer 25, times  $t$  and  $t'$  being chosen as short as possible such that, after the injection gate 26 has been eliminated, the ends 250, 251 of the said inner barrier material layer 25 of the said head 2 are entirely encapsulated by the said structure material A of the said internal and external layers, these ends being separated from the external medium by a thickness of at least 20  $\mu\text{m}$  of the said structure material A,

b) injection of the said structure material is continued for an additional time  $T'$  equal to at least  $T_0$ , in order to stabilize the quantity of injected structure material.

9. (Amended) Process for manufacturing tubes (1) in which a head (2) is assembled on a skirt (3) according to claim 7, typically by welding.

11. (Amended) Process according to claim 7, in which  $n$  tube heads (2) are made simultaneously, where  $n$  is typically between 2 and 16, using  $n$  injection heads (6) supplied with structure material A by means of an extruder (63) for material A and a distributor (630) with  $n$  arms, and supplied with

barrier material B by means of an extruder (64) for material B and a distributor (640) with n arms.

12. (Amended) Manufacturing process according to claim 10, in which a turntable or carousel (76) with a vertical axis of rotation (77), divided into p sectors (71, 72, 73, 74) p typically being equal to 8, and indexed in rotation with an angular pitch equal to  $360^\circ/p$ , successively brings each sector in front of at least three fixed stations, at different angular positions with respect to the said axis of rotation, that is a first skirt loading station (71) on the said turntable sector, then a second station (72) for co-injection and insert molding of the said heads on the said skirts, and a third section at which the tubes (74) are unloaded from the said turntable, the residence time of a sector facing each of the fixed stations being equal to the sum  $T_0 + T'$ , preferably varying from 1 second to 3 seconds, and the time interval between two fixed stations being determined particularly by the angular offset between these two fixed stations.

14. (Amended) Device for the manufacturing of tube heads or tubes, using the co-injection process according to claim 7, comprising 1 to n coinjection heads (6) according to the number n of tube heads (2) to be coinjected simultaneously in 1 to n corresponding cavities (67) in which:

a) each coinjection head (6) is supplied with structure material A and barrier material B,

b) each head comprises a ring opening (66) leading to said cavity (67), which may be supplied with material A via a channel (634), or with a ring flow of material A/B/A via opening (53) of a coinjection nozzle (5) supplied with materials A and B, and

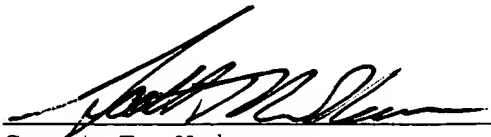
c) each head comprises means for ensuring the programmed injection of material A or of said flow A/B/A/ into said cavity (67) at predetermined times in the production cycle.

#### REMARKS

By the above amendment, the multiple dependencies have been removed from the claims. In addition, an occurrence of the phrase "barrier material A" in claim 2 has been changed to "structural material A" to make claim consistent with claim 1. An action on the merits is respectfully requested.

Respectfully submitted,  
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